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IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PC 2800 MAIL ROOM

PATENT APPLICATION

#3
5-2-01

Applicant(s): **Kravets et al.**

Case no.: **SAR 13896**

Serial No.: **09/769,599**

Filed: **January 25, 2001**

Group Art Unit: **2623**

Title: **METHOD AND APPARATUS FOR PERFORMING MOTION ANALYSIS
ON AN IMAGE SEQUENCE**

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

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Technology Center 2600

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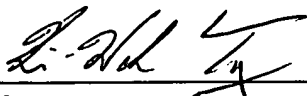
S I R:

SUBMISSION OF FORMAL DRAWINGS

The applicants have submitted herewith seven (7) sheets of formal drawings (FIGs 1-10) in connection with the above-captioned application.

Respectfully submitted,

4/17/01


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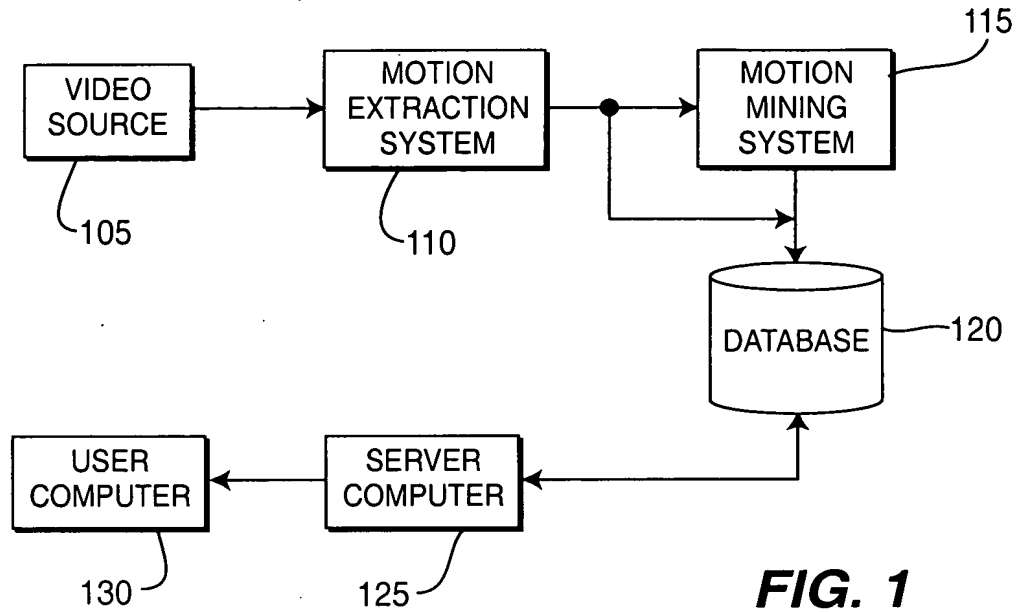


FIG. 1

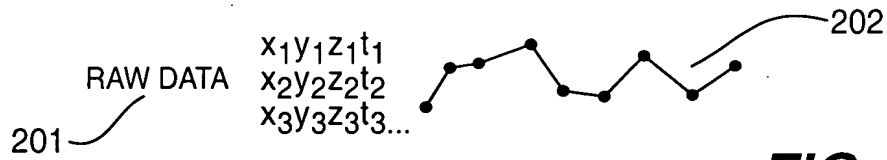


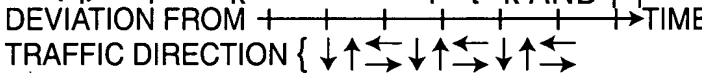
FIG. 2A

MOTION (TRAJECTORY) INFORMATION	SYMBOL	OPERATION ON RAW DATA	EXPLANATIONS
TIME SPAN	T	RANGE	
REGION	R	AREA, \cap	
BEGIN POINT	B	\subset	CONTAINED IN
END POINT	E	\subset	CONTAINED IN
SPEED RANGE	S	\cap, \subset, \supset	
DIRECTION	V	\approx	
ACCEL RANGE	A	\cap, \subset, \supset	
SHAPE	H	\approx	
PATH	P	$\approx, \approx_t, \approx_0$	UNION, TIME SHIFTED, OVERLAP

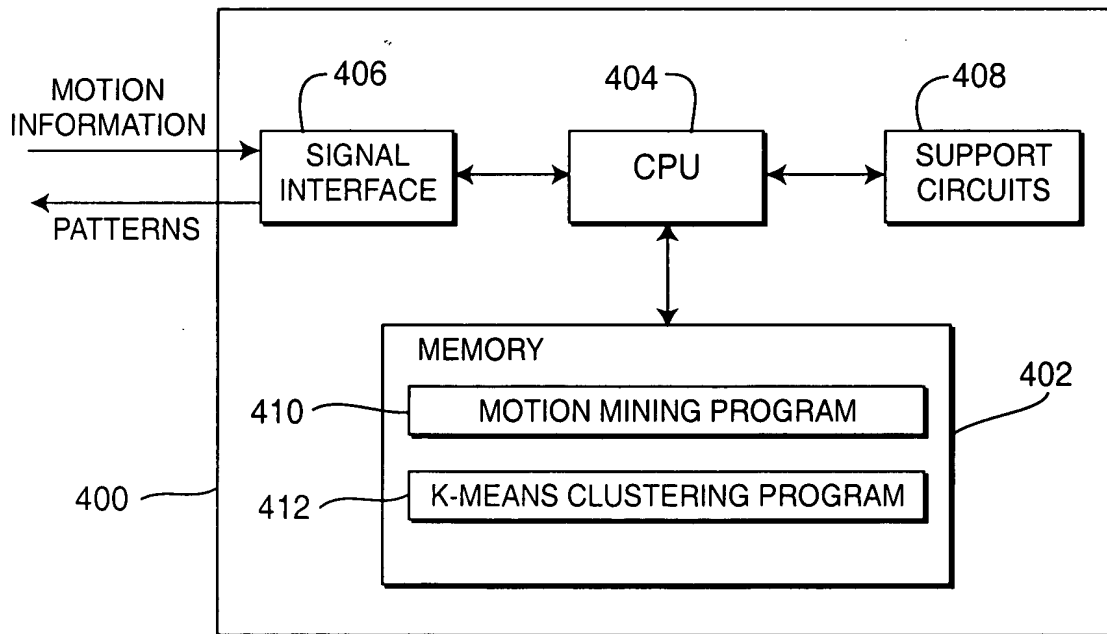
206

FIG. 2B



MOTION PATTERNS EXAMPLES	QUERY BASED ON OPERATORS (, ARE USER INPUT/PARAMETERS)	
• OBJECT STOPPING	$\{J: J.A \cap [-\infty, 0) \text{ and } 0 \leq J.S\}$	310
• OBJECT MOVING FAST	$\{J: J.S \in [\text{ }, \infty)\}$	
• ACTIVE REGION	$R = \cap J_i.R$, WHERE $ \{J_i\} > \text{ } \text{ AND } R.AREA < \text{ }$	
• SOURCE REGION	$R = \cap J_i.B$, WHERE $ \{J_i\} > \text{ } \text{ AND } R.AREA < \text{ }$	
• BEATEN PATH	$P = \cap J_i.P$, WHERE $\forall J_i, \{J_k: J_k \approx_o J_i\} > \text{ }$	
• ROAD	BEATEN PATH WITH $\text{ } = 1$	
• CONVOY	$= \{J_i\}: \forall J_i \quad J_k$, WHERE $J_i \approx_t J_k$ AND $ \text{ } \geq \text{ }$	
• RAN A TRAFFIC LIGHT	DEVIATION FROM 	
• ILLEGAL PARKING	OBJECT STOPPED WHILE OBJECT IN FRONT MOVES	

300

FIG. 3

120

FIG. 4

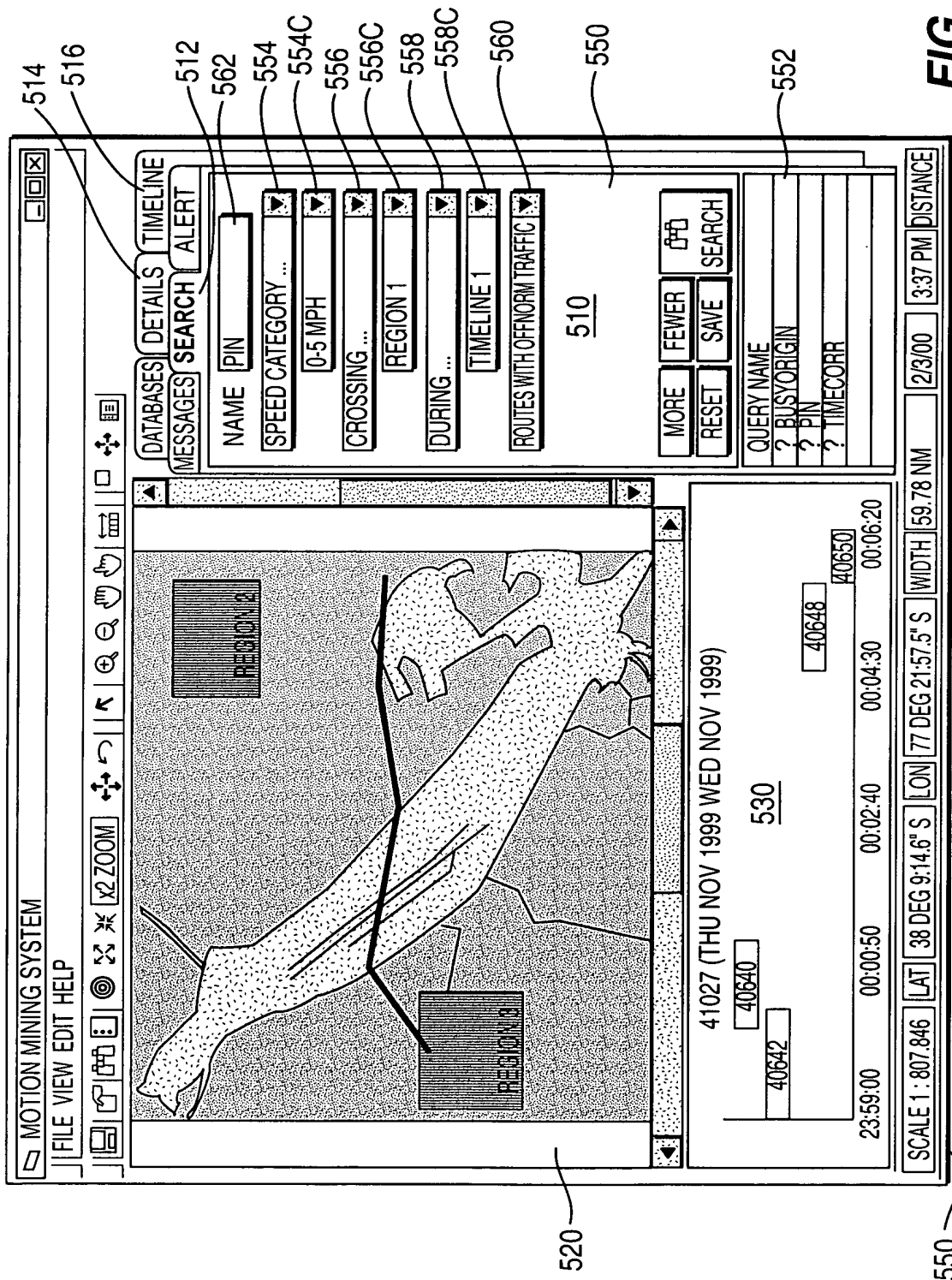


FIG. 5

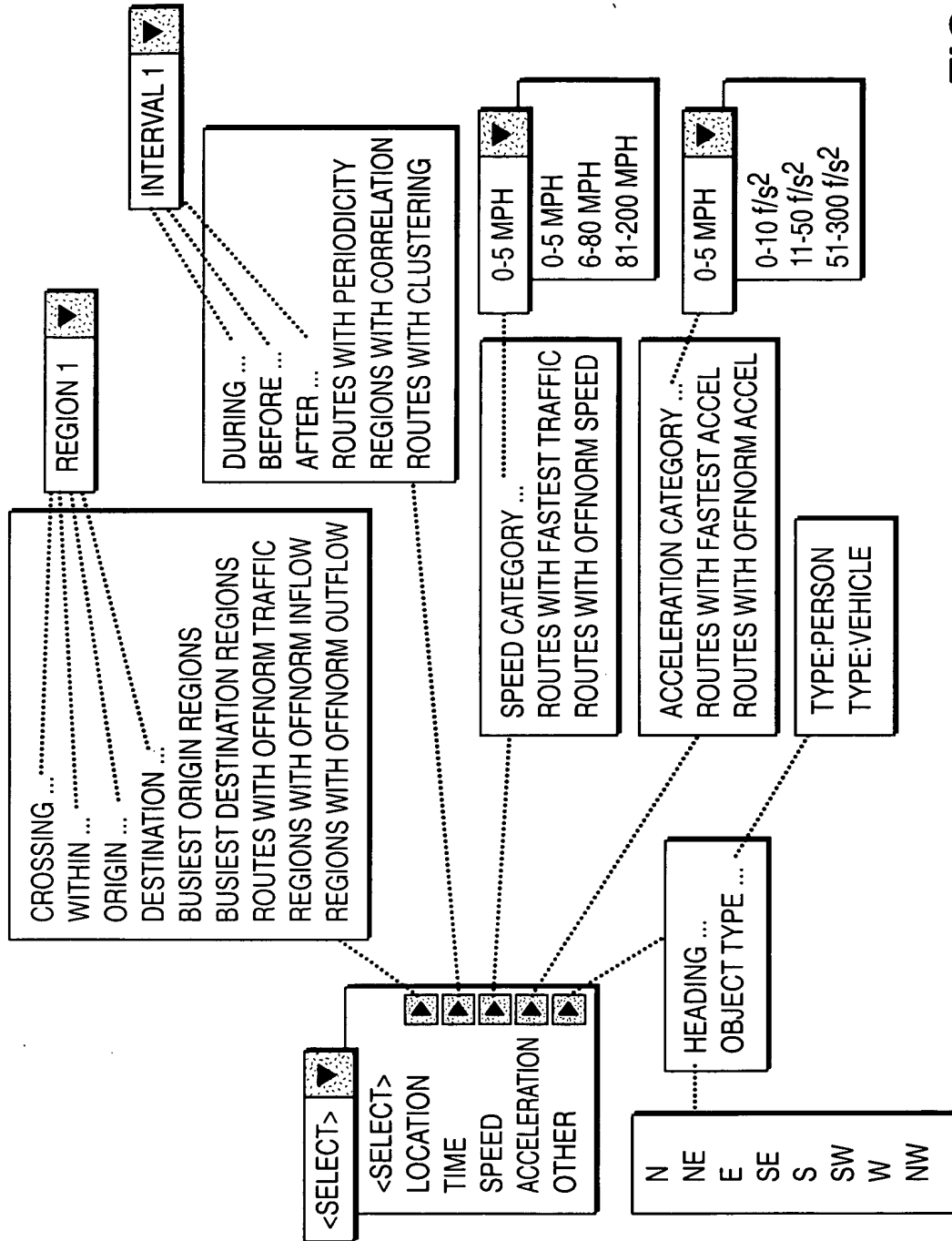


FIG. 6

MESSAGES

SEARCH

ALERT

DATABASES

DETAILS

TIMELINE

☒ TIME INTERVAL

START DATE

11/14/99

START TIME

12:00:00AM

END DATE

11/14/99

END TIME

2:00:00AM

COMMIT

RESET

TIMELINES

◀

TIMELINE 1

NOVEMBER 1999

SUN	MON	TUE	WED	THU	FRI	SAT
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

TODAY: 2/3/00

700

FIG. 7

MESSAGES

SEARCH

ALERT

DATABASES

DETAILS

TIMELINE

ACCEL

12.1

SPEED

1000.1

12000.1

0

5000

10000

15000

GROUP 41027

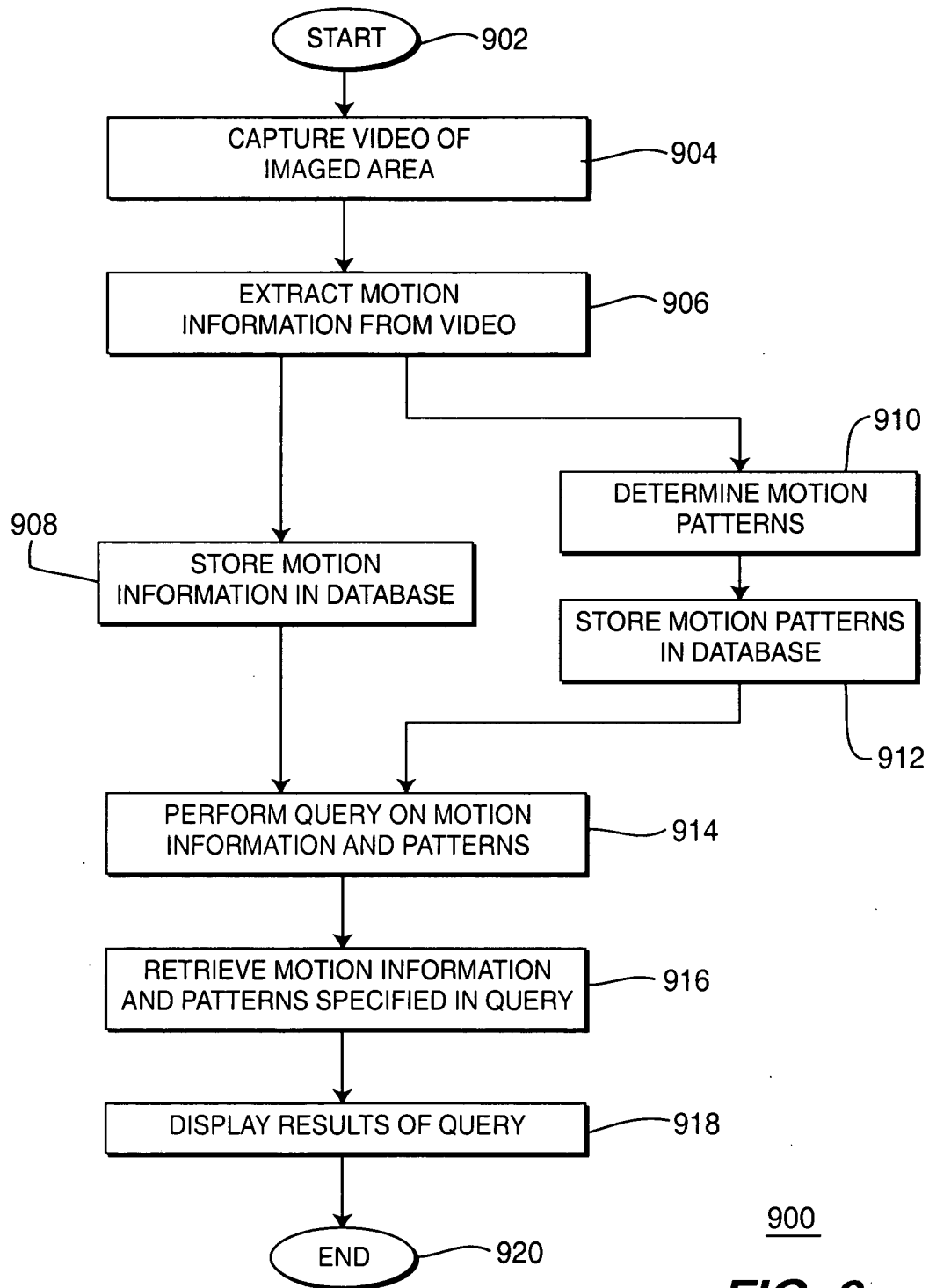
SHOW ALL TRAJECTORIES

CURR

HIST

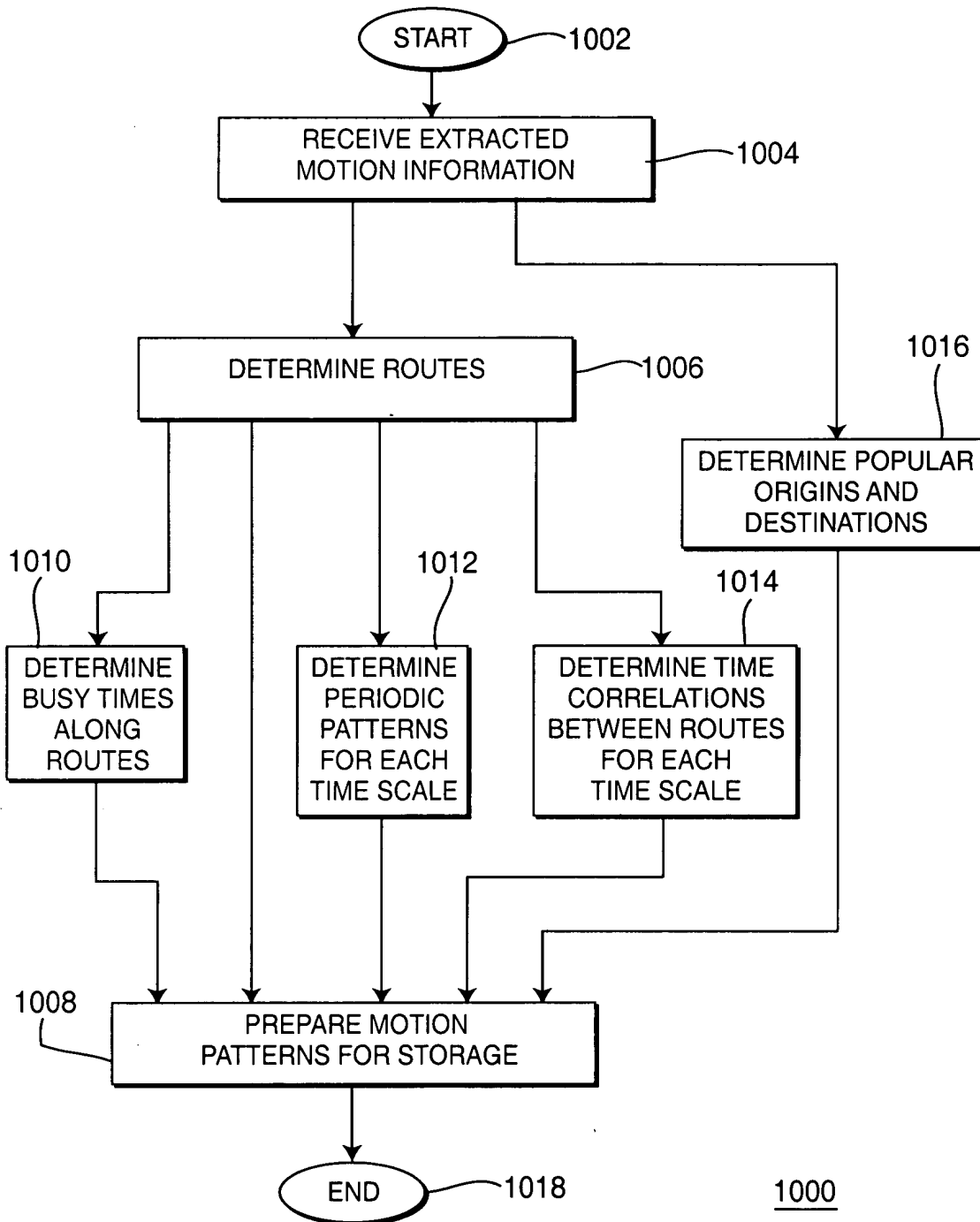
800

FIG. 8



900

FIG. 9

**FIG. 10**